Evaluation of Joint Swelling

1. Distribution
2. Acute vs. Chronic
3. Symptoms beyond arthritis (systemic)
4. Joint inflammation

1.Distribution

- Polyarticular Symmetric
  - RA, SLE, viral
- Monoarticular
  - OA, septic arthritis, gout
- Migratory
  - Lyme, GC, rheumatic fever
- Oligoarticular Asymmetric
  - Spondyloarthropathies, OA

2. Acute or Chronic

Consider a patient presenting with monoarthritis. If the patient has symptoms for months to years this is likely to be ostoarthritis. On the other hand, if the monoarthritis occurred just a few days ago the likley diagnosis will be crystal induced arthropathy or septic arthritis.

3. Evidence of Systemic Symptoms

- SLE
  - skin, lung, CNS, blood, kidney
- Sjogren's
  - sicca, parotid enlargement
- Systemic Sclerosis
  - skin, Raynaud's
- Wegener's
  - sinusitis, rhinitis, lung, kidney
- OA
  - paucity of systemic symptoms

4. Evidence of Inflammation

- Erythema, warmth
- Joint stiffness > 1 hour
- Elevated ESR, C reactive protein
- Elevated white cells in the aspirate

- Example:

  RA vs. OA

Examples

A 24 year-old woman presents with symmetric wrist, MCP, PIP swelling and pain.

Examples

A 32 year-old man presents with right knee swelling. You had evaluated him a few days ago for right wrist swelling and pain that has now resolved.

KAPLAN

MEDICAL

Evaluating a Patient with Arthtritis and Rheumatic Disease

END

Tests in Rheumatology

Joint Aspiration

- When do we do a joint aspiration?

- Contraindications
  cellulitis
  bleeding diathesis

- What tests do we get?
  3 C's (cells, culture, crystals)
  gram stain

Disease	WBCs	Crystals/Polarization
DJD traumatic	<2,000	Negative
Inflammatory: RA Gout CPPD	5,000-50,000	Negative for RA; Needle-shaped or negative birefringent Rhomboid or positive birefringent
Septic	>50,000	Negative (Gram stain and culture usually negative)

Tests in Rheumatology

Antinuclear Antibodies (ANA's)

- Ab's against nuclear structures
- Common in SLE, Sjogren's, Scleroderma etc.
- May be seen in 'normal' patients
- Pattern: rim, nucleolar
- Subsets: DS DNA ab's, SM ab's, anti-histone ab's (see tables)

Peripheral (Rim)	SLE
Diffuse	Nonspecific
Speckled	Nonspecific
Centromere	CREST
Nucleolar	Systemic sclerosis

Anti-ds-DNA (native DNA)	SLE only (60%); an indicator of disease activity and lupus nephritis
Anti-SM	SLE only (25-30%)
Anti-histone	Drug-induced lupus (95%)
Anti-Ro (SSA)	Neonatal lupus, Sjögren and in the 3% of ANA-negative lupus
Anti-LA (SSB)	Sjögren
Anti-centromere	CREST
Anti-RNP	100% mixed connective tissue disease (MCTD)

Tests in Rheumatology

Antinuclear Antibodies (ANA's):

How do we use these tests in the clinical setting?

1. Negative test

2. Positive test

Tests in Rheumatology

Rheumatoid Factor

- Usually positive in RA
- RF negative RA
- Very high RF = poor prognosis
- RF + in other diseases

ANCA

- Wegener's = + C-ANCA
- PAN, IBD = + P-ANCA

Antiphospholipid antibodies

- Lupus anticoagulant
- Anticardiolipin antibodies
- Increased PTT, false + VDRL
- Hypercoagulable state
- Venous and arterial thrombosis
- Spontaneous abortions in otherwise healthy women
- Tx:
  anticoagulate if symptomatic

Rheumatoid Arthritis

A 26 year-old woman presents with a 3 week history of joint swelling and stiffness.

PIP's, MCP's and wrists are involved symmetrically, which you confirm on exam. Stiffness in the AM is ~ 2 hours. She also has fatigue and low-grade fever. She has no back pain or DIP involvement.

Rheumatoid Arthritis

- chronic inflammatory multisystemic disease
- main focus: synovium
- hallmark: inflammatory synovitis in a symmetric distribution
- bone erosions, deformities
- predominant cells: T lymphocytes
- pro-inflammatory cytokines that mediate inflammation: TNF-a, IL-1, IL-6

Rheumatoid Arthritis

Dx criteria:

1. Morning stiffness (> 1 hr) for 6 weeks
2. Swelling of wrists, MCP's, PIP's for 6 weeks
3. Swelling of 3 joints for 6 weeks
4. Symmetric joint swelling for 6 weeks
5. Joint erosions on X-rays
6. RF +
7. Rheumatoid nodules

Rheumatoid Arthritis

Radial deviation of the wrist with ulnar deviation of the digits

Boutoniere deformity

Swan neck deformity

Extra-articular manifestations:

Rheumatoid Nodules

- Focal vasculitis
- 20-30% of RA; occur in areas of mechanical stress (olecranon, occiput, achilles tendon).
- MTX may cause a flare

Felty's Syndrome

Caplan's Syndrome

Rheumatoid Arthritis

- Laboratory
  1. RF
  2. Anemia
  3. ESR
  4. Xrays
  5. Synovial Fluid Analysis

Rheumatoid Arthritis Treatment

- NSAID's
- Cyclooxygenase 2 (COX-2) inh?
- Corticosteroids
- MTX
- Hydroxychloroquine
- Tumor necrosis factor (TNF) inhibitors
  1. *Infliximab (Remicade)*
  2. *Adalimumab (Humira)*
  3. *Etanercept (Enbrel)*

Rheumatoid Arthritis Complications

Atlantoaxial subluxation

- Atlas (C1) and axis (C2) involvement
- Incidence: 25 - 80%
- Paraplegia, quadriplegia
- Subtle symptoms: neck pain (occipital), C2 radicular pain (parasthesias of the hands and feet)
- Dx: X-ray of the cervical spine
- Screen for C1-C2 subluxation before intubation or anesthesia

SLE

A 35 year-old woman is brought to the hospital with confusion for a day. The family says that generally 'she has not been herself lately' but the day of admission 'she did not know where she was'.

He BP is elevated, she has decreased air entry in the right lung base with dullness, and there is evidence of symmetrical joint swelling in the wrists, MCP and PIP joints.

Laboratory studies: elevated creatinine (2.4 mg/dl) as well as proteinuria.

SLE

- Systemic disease in which tissues and multiple organs are damaged by pathogenic autoantibodies and immune complexes
- Women = 90%
- Ultraviolet (UV)-B light is the only environmental factor known to cause flares

SLE

Dx Criteria:

- Malar rash
- Discoid rash
- Photosensitivity rash
- Oral Ulcers
- Arthritis
- Serositis (pleuritis or pericarditis)
- Renal Involvement
- Neurologic (seizures,psychosis)
- Hematologic (hemolytic anemia)
- Immunologic disorder (anti-ds dna, anti-sm)
- ANA's

SLE

Clinical Pearls:

ANA test is always positive in SLE

Specific ab's for lupus:

Anti-DS DNA ab's

Anti-SM ab's

Dx a SLE flare by finding:

C3, C4 decreased

DS DNA elevated

SLE

Treatment:

- Protective clothing, sunglasses, sunscreen
- NSAID's: arthritis and pleurisy.
- Corticosteroid creams: skin rashes
- Hydroxychloroquine
- Oral corticosteroids
- Cytotoxic drugs (azathioprine, cyclophosphamide)

SLE

Pregnancy:

- Fertility rates: normal
- Lupus worsens with pregnancy?
- Spontaneous abortions, stillbirths: increased
- Anti-phospholipid antibodies cause placental infarcts
- Screen for SSA/anti Ro antibodies

Drug-Induced Lupus

- Most commonly associated:
  1. hydralazine
  2. isoniazid
  3. procainamide
  4. quinidine
- Arthritis, fever
- Usually not confused with drug-induced lupus
- Anti-histone antibodies
- *Quinidine, hydralazine are often ANA-negative*
- Medication stopped: symptoms resolve within 1-2 weeks

Scleroderma

A 36 year-old woman comes to see you because 'her skin feels tight'. She also reports painful, discolored fingertips with exposure to cold.

The physical discloses an elevated BP and diffuse shiny, thickened skin.

The laboratory test reveal an elevated creatinine.

Scleroderma

Scleroderma is a chronic multisystem disease characterized clinically by thickening of the skin caused by accumulation of connective tissue and by involvement of visceral organs (GI, lungs, kidneys)

Scleroderma

- Raynaud's phenomenon ~ 100%
- Skin thickening ~ 100%
- GI:
  - esophageal dysmotility
  - hypomotility
  - bowel dilatation
- Pulmonary:
  - pulmonary fibrosis
- Scleroderma renal crisis
  - malignant HTN, ARF
- ANA's: scl-70 +

Scleroderma

Treatment:

- No cure
- D-Penicillamine (skin)
- Calcium channel blockers (Raynaud's)
- ACE inhibitors (renal, HTN)

CREST (limited scleroderma)

- skin involvement does not extend above the elbow or above the knee.
- generally progresses slowly
- pulmonary arterial hypertension: 25–50%
- interstitial lung disease may occur in 10% of this population
- Anti-centromere antibodies +

Raynaud's Phenomenon

- Pallor, cyanosis in response to cold or emotional stimuli
- Vasoconstriction
- 5% general population
- Young women
- Primary vs. Secondary
- Look for systemic manifestations to R/O secondary
- Nailfold capillaroscopy

Sjogren's Syndrome

A 42 year-old woman comes to your office with 'sand-like feeling' in her eyes constantly. She also reports dry mouth and difficulty swallowing solid and bulky food.

The examination discloses bilateral parotid enlargement.

The ANA test is positive

Sjogren's Syndrome

- Autoimmune exocrine glad disease
- Lymphocytic infiltration
- Xerostomia
- Dry eyes
- Parotid enlargement
- Dental caries
- Primary vs. secondary: RA, primary biliary cirrhosis,SLE
- Lymphoma

Sjogren's Syndrome

Diagnosis:

- Schirmer's test
- Rose Bengal stain
- ANA's: anti-Ro (SSA), anti-La (SSB).
- Salivary gland biopsy: lympocytic infiltration

Treatment:

- No cure
- Symptomatic: artificial tears.